Claims

1. A method for image separation of an image, the image comprising pixels, the method comprising the steps of:

identifying kernels reflected by at least one of the operators selected from the group consisting of: $P(x-w,y) - P(x,y) > t$ AND $P(x+w, y) - P(x,y) > t$; and $P(x, y-w) - P(x,y) > t$ AND $P(x, y+w) - P(x,y) > t$; and $P(x+d, y+d) - P(x,y) > t$ AND $P(x-d, y-d) - P(x,y) > t$; and $P(x-d, y+d) - P(x,y) > t$ AND $P(x+d, y-d) - P(x,y) > t$;

associating said kernels with a first layer; and

classifying as a second layer, said pixels which are not associated with said first layer.

2. The method of claim 1 wherein said first layer is a text or graphics.

3. The method of claim 1, wherein said second layer is a background.

4. The method of claim 1 wherein said first layer is darker than said second layer.

5. The method of claim 1 wherein said first layer is lighter than said second layer.

6. The method of claim 1, wherein identifying kernels comprises performing a binarization technique.

7. The method of claim 1, wherein identifying kernels comprises performing text binarization.

8. The method of claim 1, wherein identifying kernels comprises examining grey characteristics of pixels in an expansion of said kernels, wherein said expansion is less than or equal to 3 times w, wherein w is a typical stroke width of said image.

9. The method of claim 1, and further comprising the step of storing said first layer.

10. The method of claim 1 and further comprising the step of compressing said first layer with a high resolution compression technique.

11. The method of claim 1 and further comprising the step of compressing said second layer with a high lossy compression method.

12. A method of compressing an image having pixels, the method comprising the steps of :

identifying four grey levels of said pixels, each of said four grey levels is mapped by an associated two bits;

identifying per each said pixel an associated grey level, wherein said associated grey level is one of said four grey levels;

storing per pixel, an associated pixel location and said associated grey level; and storing said mapping of each said four grey levels.

13. The method claim 12, wherein said pixel location is a mask image.

14. The method of claim 12, further comprising the steps of:

dividing said image into tiles, and

per tile, performing said steps of identifying, identifying, storing and storing.

15. A method of compressing an image having pixels, the method comprising the steps of :

identifying Y grey levels, wherein Y is greater than 2, wherein each of said Y grey levels is mapped by the root of Y associated bits, wherein the number of bits is $\log_2 Y$;

identifying per each said pixel an associated grey level, wherein said associated grey level is one of said Y grey levels;

storing per pixel, an associated pixel location and said associated grey level; and

storing said mapping of each said Y grey level.

16. The method of claim 15 wherein Y is 2 and said number of bits is 1.

17. A method comprising the steps of:

(i) identifying first and second image content;

and

(ii) separately compressing said first and second image content.

18. The method of claim 17 wherein said first and second content comprise image foreground and image background.

19. The method of claim 18 comprising employing a higher resolution compression technique to compress said foreground content, as compared with said background content.

20. A system for separating an image comprising:

a scanner for creating a digital image;

a processor for separating said digital image into a first and second layer, and for compressing said first layer with a first compression technique and for compressing said second layer with a second compression technique; and

a memory for storing said compressed first and second layers.

21. The system of claim 20, wherein said processor comprises a means for identifying kernels reflected by at least one of the operators selected from the group consisting of: P(x-w,y) - P(x,y) >t AND P(x+w, y) - P(x,y) > t ; and P(x, y-w) - P(x,y) > t AND P(x, y+w) - P(x,y) > t ; and P(x+d, y+d) - P(x,y) > t AND P(x-d, y-d) - P(x,y) > t ; and P(x-d, y+d) - P(x,y) > t AND P(x+d, y-d) - P(x,y) > t; and associating said kernels with said first layer.

22. The system of claim 21 wherein said means for identifying is a text binarization tool.

23. The system of claim 20, wherein said processor comprises a compression means for compressing said first layer with a high resolution compression technique.

24. The system of claim 20, wherein said processor comprises a compression means for compressing said second layer with a high lossy compression method.

25. The system of claim 20, wherein said processor comprises restoration means for creating a restored digital image from said compressed first and second layer.

26. The system of claim 20, wherein said compressed first layer comprises, a binary mask of the foreground layer, compressed grey level foreground layer data, and quantization grey levels.

27. The system of claim 26, wherein said compressed grey level foreground layer data is stored a two bit buffer.

28. The system of claim 26, wherein said compressed grey level foreground layer data is stored a one bit buffer.

29. The system of claim 26, wherein said quantization grey levels comprises four levels.

30. The system of claim 26, wherein said quantization grey levels comprises two levels.

31. A computer software product, comprising a computer-readable medium in which program instructions are stored, which instructions when read by the computer, separates an image into a first and second layer, and compresses said first layer with a first compression technique and said second layer with a second compression technique.